

NAME: _____

DATE: _____

Unit-2 Mastery Assessment (version 612)

Question 1 (10 points)

Let f represent a function. If $f[14] = 32$, then there exists a knowable solution to the equation below.

$$y = \frac{f\left[\frac{x}{2} - 8\right] - 20}{4}$$

Find the solution.

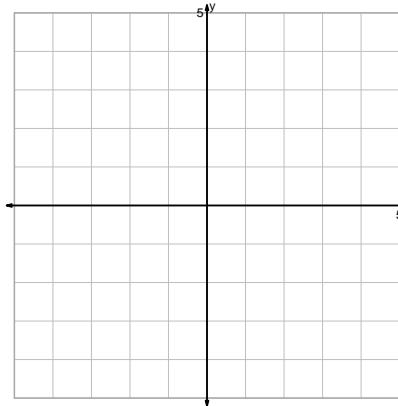
$$x =$$

$$y =$$

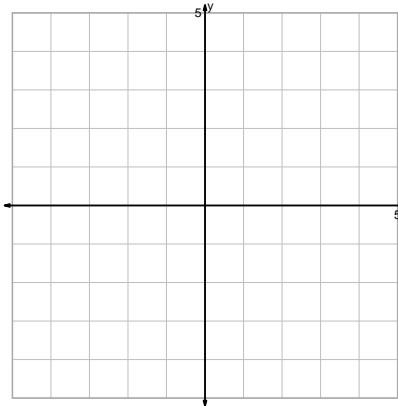
Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

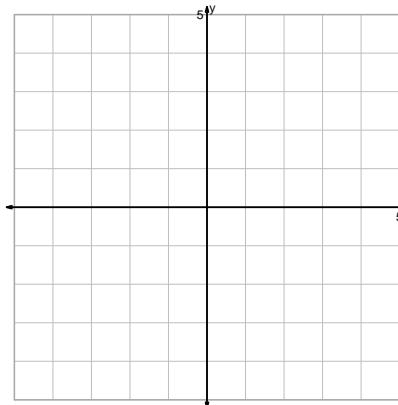
$$y = \sqrt[3]{2x}$$



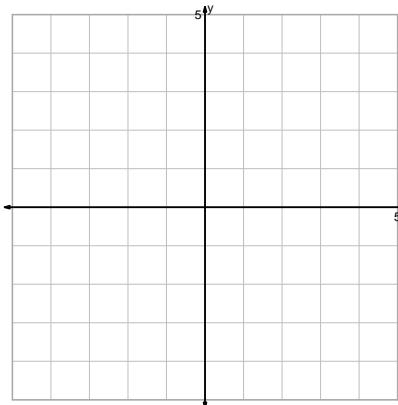
$$y = \log_2\left(\frac{x}{2}\right)$$



$$y = x^2 + 2$$

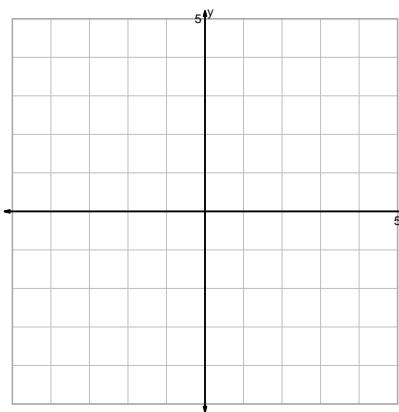


$$y = x^3 - 2$$

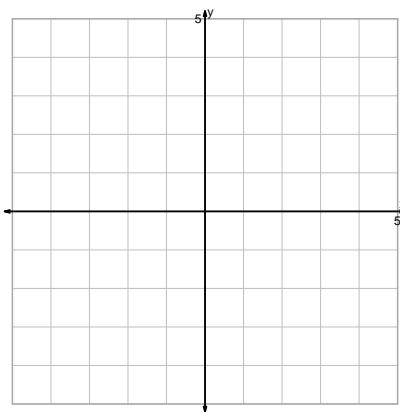


Question 2 continued...

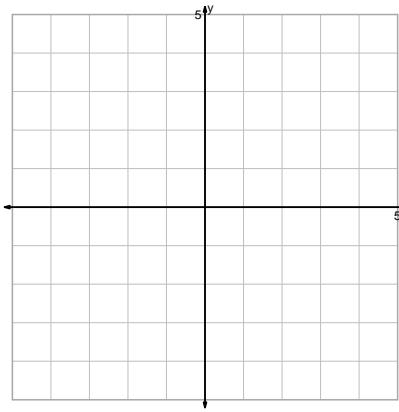
$$y = \sqrt{x+2}$$



$$y = 2 \cdot x^3$$

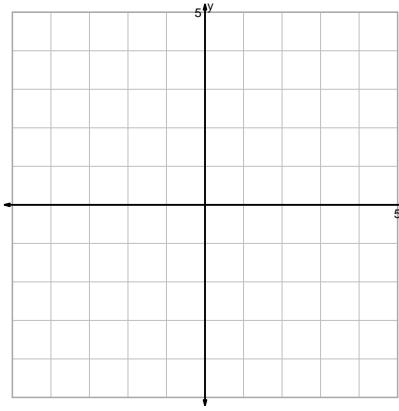


$$y = -2^x$$

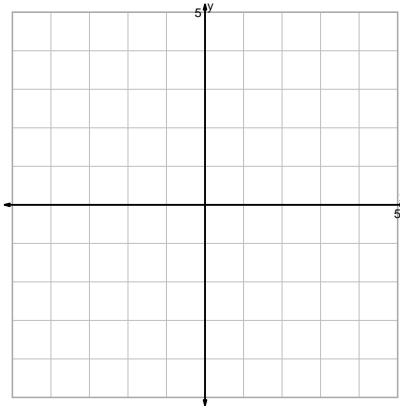


$$y = \frac{x^2}{2}$$

$$y = \sqrt[3]{x-2}$$

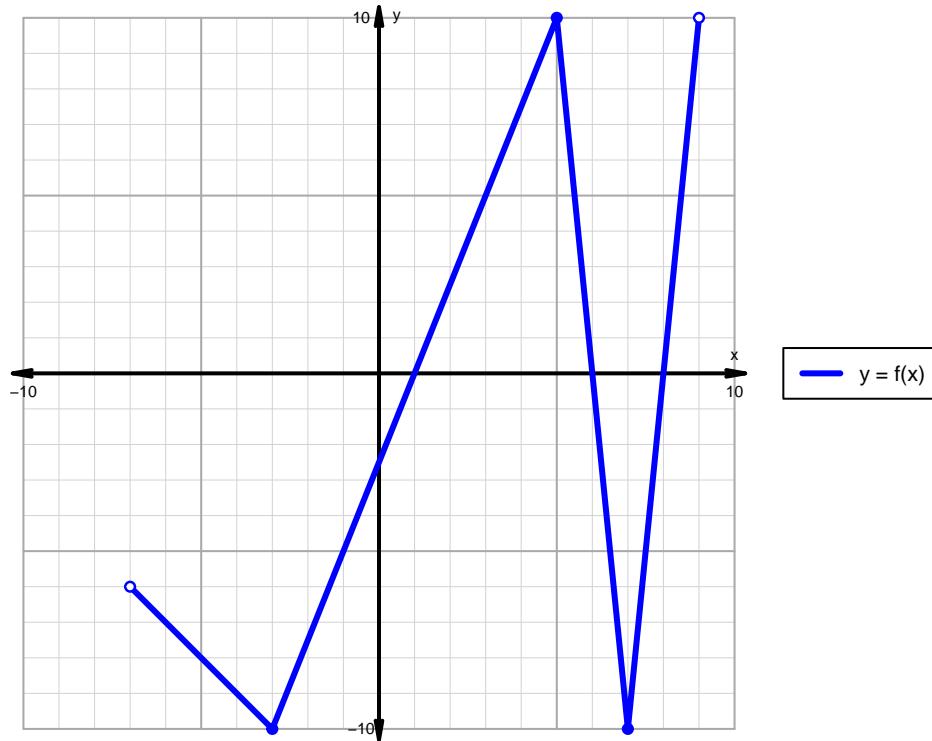


$$y = \log_2(-x)$$



Question 3 (20 points)

A function is graphed below.



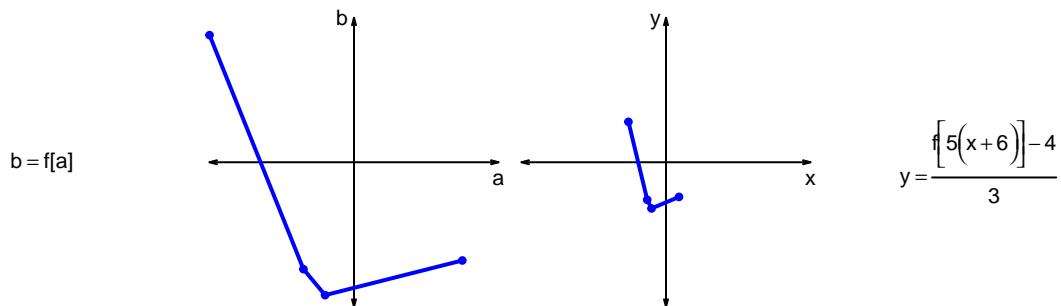
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[5(x+6)]-4}{3}$ are represented below in a table and on graphs.

a	b	x	y
-100	88	-26	28
-35	-74	-13	-26
-20	-92	-10	-32
75	-68	9	-24



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[5(x+6)]-4}{3}$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

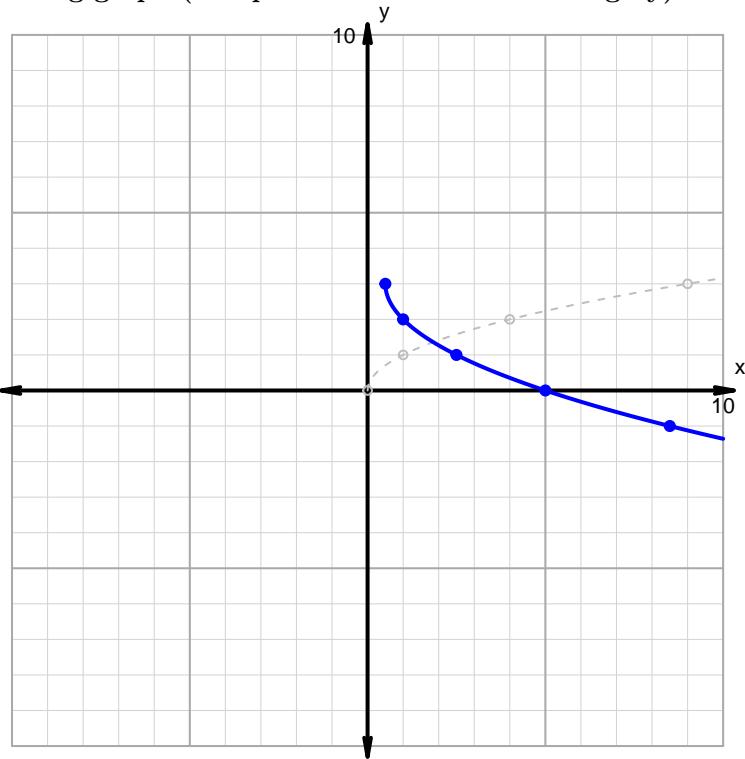
Horizontal transformations

1. Translate right by distance 1.
2. Horizontal shrink by factor 2.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate up by distance 3.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{3} \cdot |x - 5| + 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	